

## A BUTTERFLY MIGRATION

BY E. O. ESSIG

A true migration of the thistle butterfly, *Vanessa cardui* (Linn.), occurred in California from the middle to the last of March, 1926. Large numbers were first noticed in southern California about March 10. They were rapidly traveling north and entered the southern end of the San Joaquin Valley on the 12th and 14th. On the 17th they were in the Sacramento Valley, and a portion of the flock passed through Berkeley on the 23rd, 24th and 25th. In the latter place all were traveling due north. In the orchard districts the butterflies were attracted to the opening blossoms of almonds, apricots, cherries, plums, prunes and pears, all of which had an unusually heavy bloom this year. Many of the farmers were greatly annoyed by their presence. In the interior valleys the butterflies were hovering over the plants commonly called "woolly breeches" (*Amsinckia* spp.), which is a favorite food plant of the caterpillars in the West.

A full explanation of the periodic migrations of this and a closely related species, *Vanessa carye* (Hübner), has not yet been made, but they are somehow connected with years having mild, dry winters. Temperature is undoubtedly an important factor, and the continued hot weather during the month of March in California, Arizona, and northern Mexico may have started the species north.

These migrations are always toward the coast or in a northerly direction, and no return migrations have been noted. Many of the butterflies were captured, and their badly battered wings gave evidence of a long flight. They move rapidly and often cover from 100 to 200 miles per day. They rest at night and the maximum flight occurs from 2 to 3 p. m. on bright, hot days. On cold days the forward movements cease, so that the limits of the flights are probably also determined by temperature.

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NOTE BY THE EDITOR—Mr. W. S. Wright of the San Diego Museum of Natural History writes me that this migration was observed throughout southern California from Yuma to San Diego, beginning March 13, the general direction of the flight being from southwest to northeast, and the "peak" of the flight lasting about 40 minutes.

The butterflies were seen feeding at *Encelia* flowers. Mr. Wright noticed that the flight followed two days of strong wind from off the desert, and suggests that probably the butterflies were blown from the desert toward the west until they came into contact with the cool air from the ocean and were then deflected toward the northeast. Mr. Wright noted that the flight of two years ago was also preceded by a strong wind from off the desert.

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## A NEW *NOMADA*

BY C. L. FOX

*San Francisco, California*

### *Nomada* (*Gnathias*) *klamathensis*, C. L. Fox, n. sp.

Aspect of a black and yellow *Heminomada*, but with the bidentate mandibles of a *Gnathias*. Length, 8 mm.

Male. Robust. Face broad; orbits slightly converging below. Scape swollen; joint three of flagellum equal to four. Pubescence on head and thorax white, sparse, longer on sides and underneath. Punctures on head and thorax dense, coarser on vertex. Mesoscutellum low, feebly and broadly sub-bilobate. Abdomen short and broad; apical plate narrowed, notched. Wings almost clear, slightly darkened apically; nervures and stigma light ferruginous; second submarginal cell narrowed above, three-quarters of width below, receiving first recurrent nervure far beyond the middle; third submarginal cell much narrowed above; basal nervure well basad of transverso-medial nervure.

Color black with the following yellow maculations: mandibles except apices; labrum; clypeus except emarginated medial upper part; lateral face marks, broad-triangular below, upper portion narrow, not quite reaching antennal basal line; scape in front; posterior dorsal border of prothorax, interrupted medially; conspicuous spot on lower anterior part of mesopleura; large, nearly coalesced spots, on lobes of mesoscutellum; tubercles except somewhat anteriorly; tegulæ; anterior and intermediate femora in front and apex behind; posterior femora with apical front and hind part only; tibiæ and tarsi except black stripe behind on posterior metatarsi; broad bands on tergites 1-6, that on tergite 1 interrupted medially; broad band on sternite 2 (possibly on the others if uncontracted) and greater part of the ultimate sternite. Flagellum light red-brown, joints 1-3 blackened behind; apical margins of tergites and sternites somewhat dark ferruginous, lighter on posterior ones. Described from one male.

Type, male, No. 1877, Mus. Calif. Acad. Sci. Collected by myself at **Klamath Falls, Oregon**, May 12, 1924.